

SECTION 7. MLS AND DME/P FREQUENCY ENGINEERING

63. FREQUENCY ENGINEERING FOR MLS AND DME/P.

- a. **MLS and associated DME/P** frequencies are listed in section 1, figure 1.
- b. **Use of a paired channel** as listed in figure 1 requires that DME/P's be collocated with the MLS antennas, which means within 100' of the antenna.
- c. **FPSV's for MLS and DME/P** are as shown in figures 187-190.

FIGURE 187. FPSV FOR MLS APPROACH AZIMUTH/DATA COVERAGE

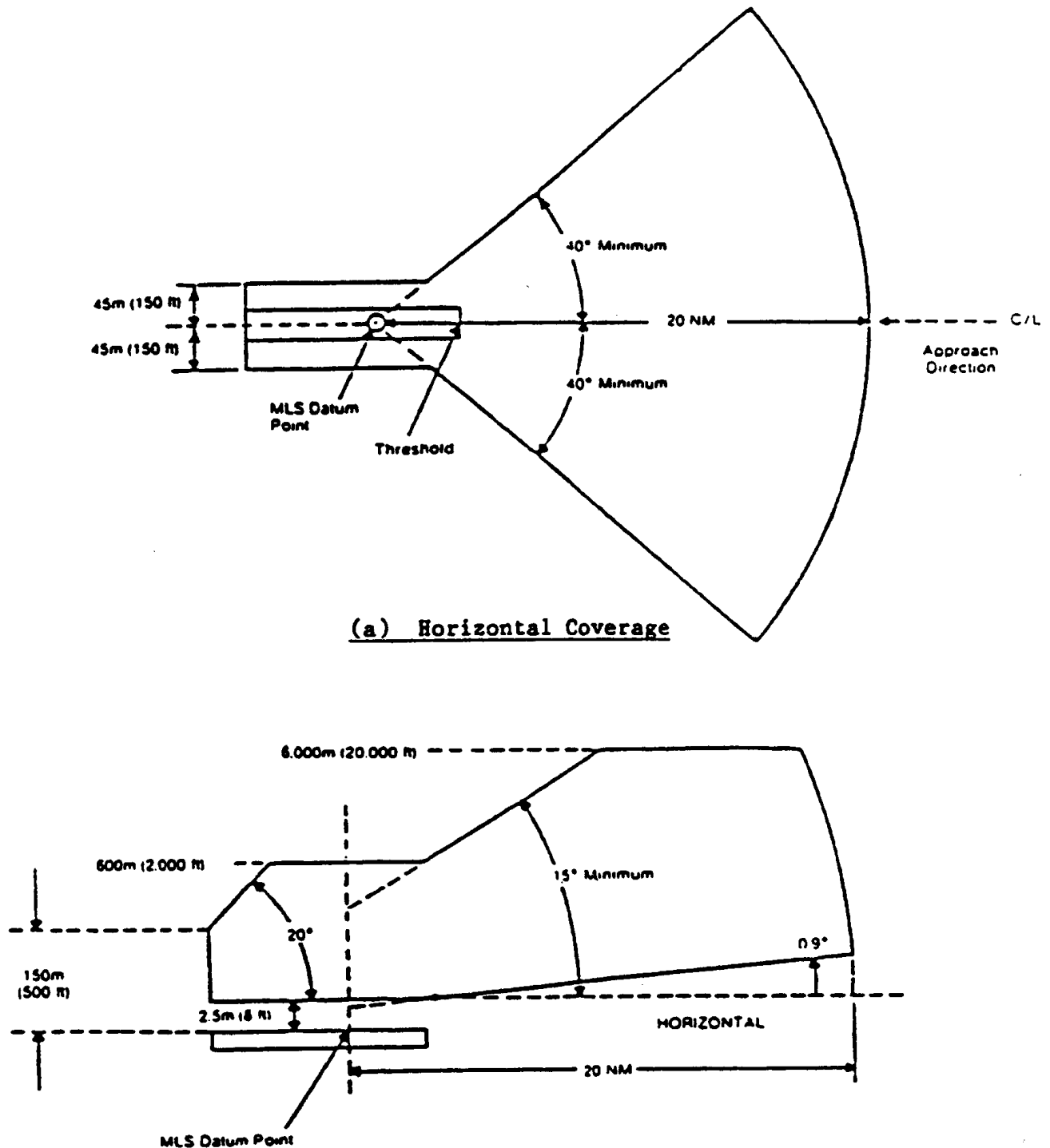


FIGURE 188. FPSV FOR MLS APPROACH ELEVATION COVERAGE

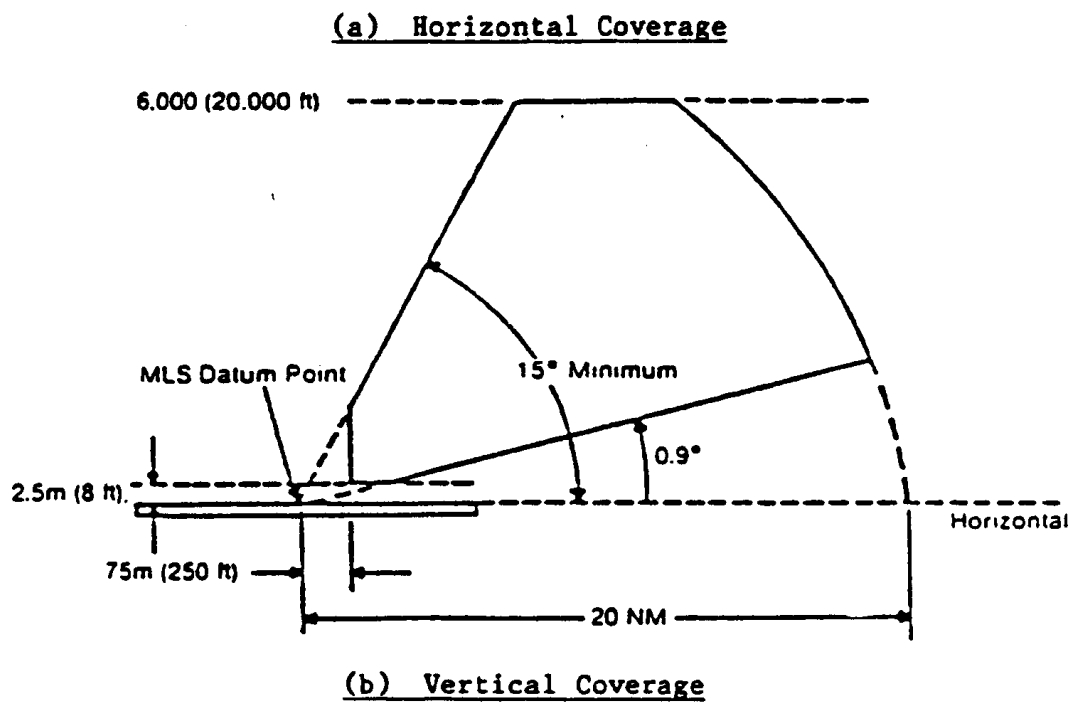
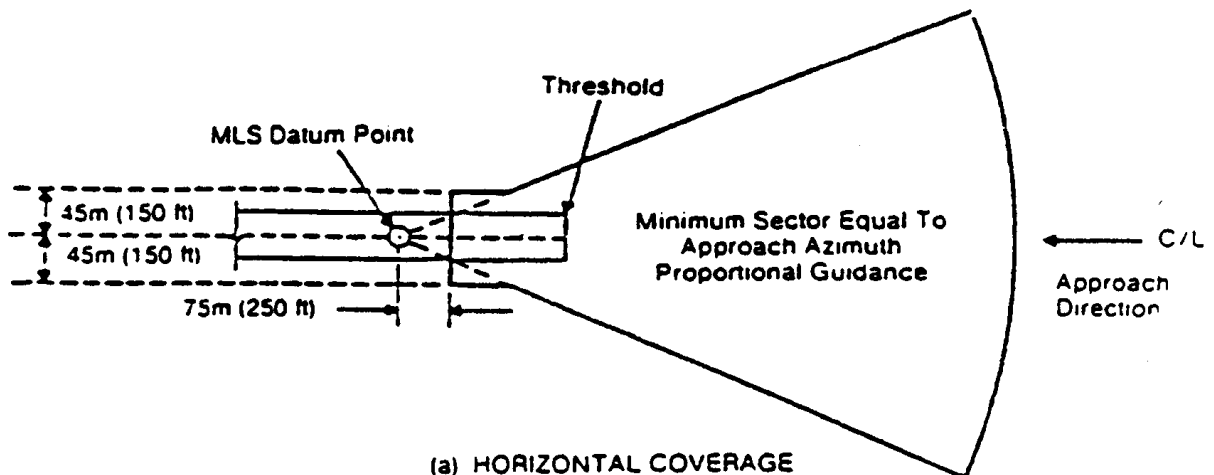


FIGURE 189. FPSV FOR MLS BACK AZIMUTH/DATA COVERAGE

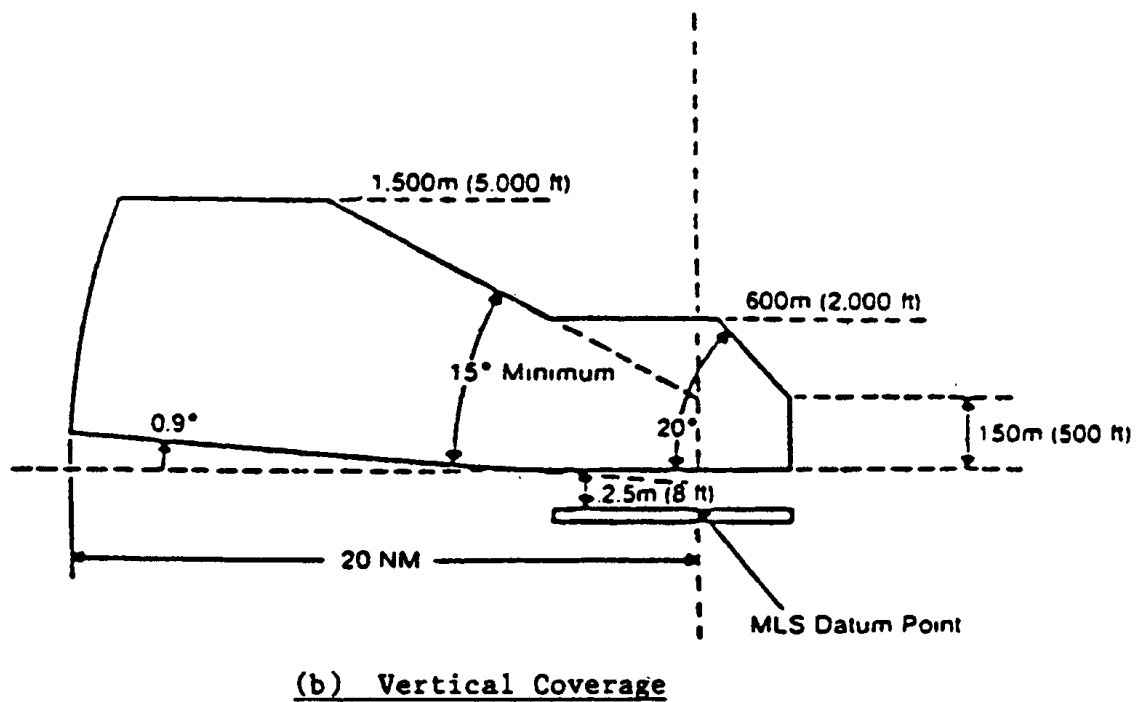
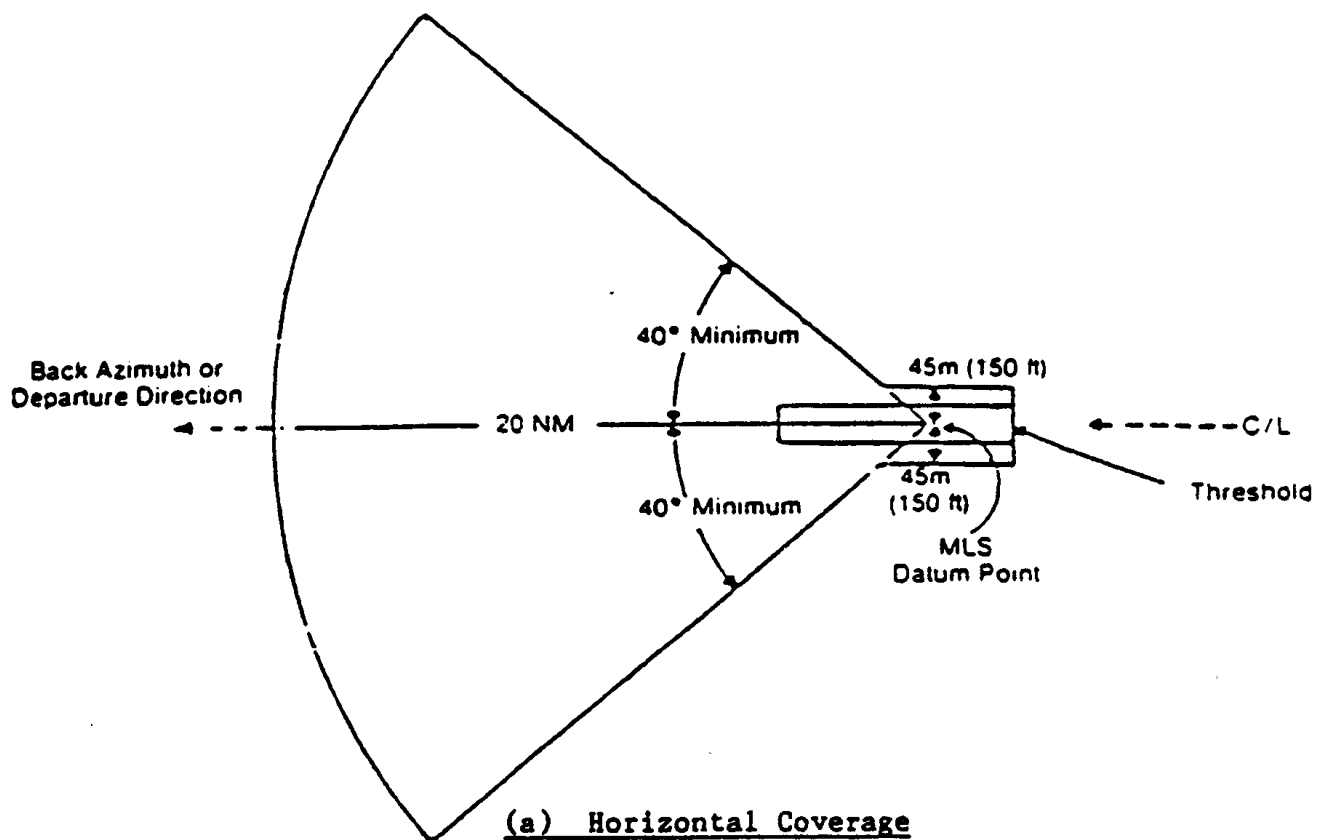
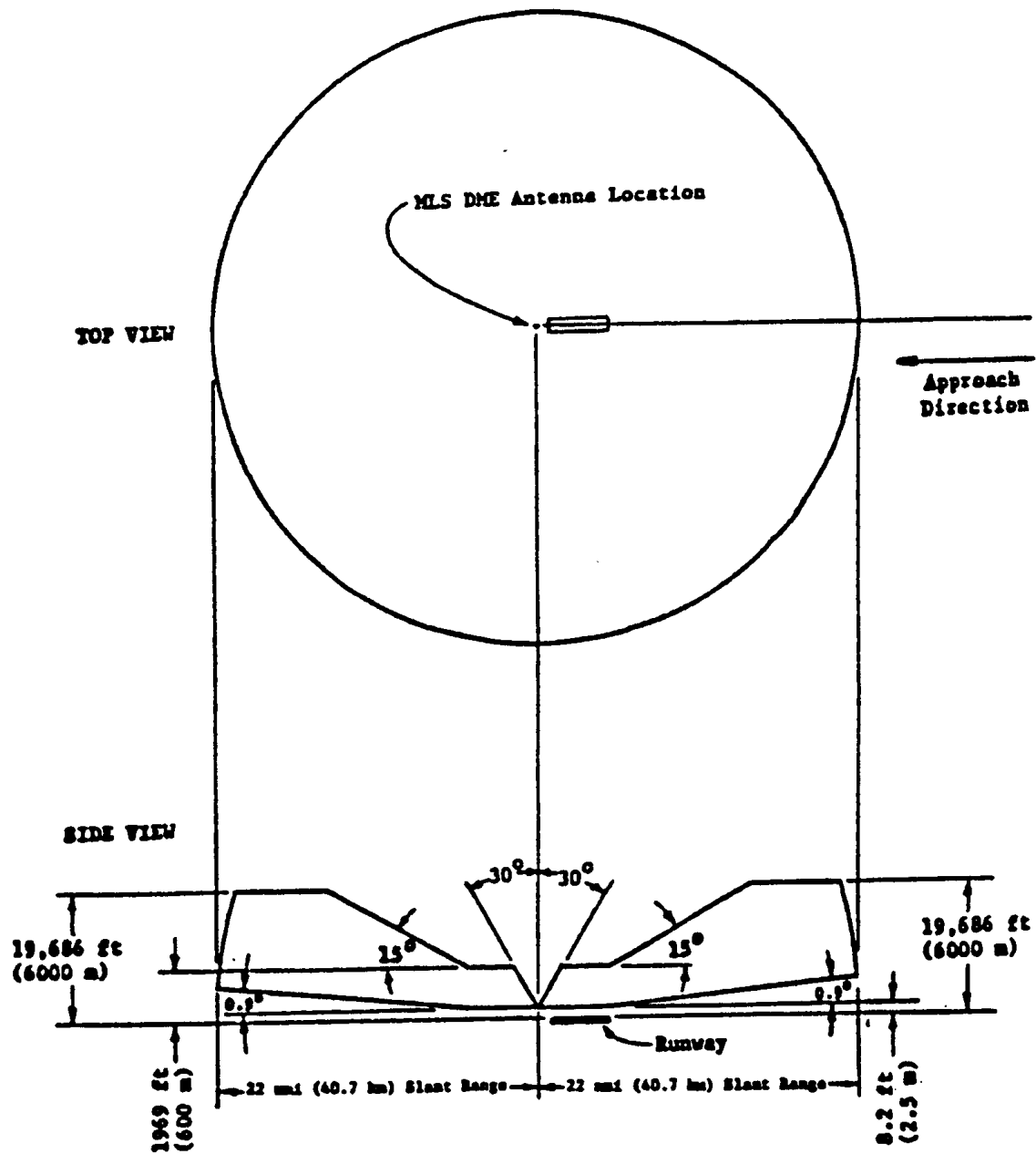


FIGURE 190. FPSV FOR MLS DME/P



d. **The MLS approach azimuth** and elevation horizontal service volumes are conical segments, 80° wide with a complex vertical service volume. Figure 191 shows the D/U values.

FIGURE 191. INTERIM MLS COCHANNEL AND ADJ. CHANNEL SEPARATION D/U VALUES

COCHANNEL	+26.5 dB D/U
1ST ADJ. CHANNEL	-19 dB D/U
2ND ADJ. CHANNEL	-23.5 dB D/U

e. **Harmful interference to DME/P's** associated with MLS is prevented by geographically separating cochannel and adjacent-channel assignments. Within each FPSV, the DME/P D/U ratio shall be at least the values shown in figure 192, on a basis of 95 percent availability.

FIGURE 192. DME/P COCHANNEL AND ADJACENT CHANNEL SEPARATION D/U VALUES

COCHANNEL @ 22 nmi	1ST ADJ. CHNL (± 1 MHz) @ 22 nmi	2ND ADJ. CHNL (± 2 MHz) @ 7 nmi	3RD ADJ. CHNL (± 3 MHz) @ 7 nmi
+9.5 dB	-23.5 dB FOR DME/P -29.5 dB FOR T-ILS-DME -39.5 dB FOR L-DME -40.5 dB FOR ALL TACAN	-20.5 dB -20.5 dB -20.5 dB -20.5 dB	NONE NONE -32.5 dB -32.5 dB
NOTES:	<p>All D/U ratios include the +1.5 dB factor for transmitter power variation.</p> <p>Cochannel and 1st adj. channel D/U values are for the protection of a 22 nmi radius.</p> <p>2nd and 3rd adjacent channel D/U values are for the protection of a 7 nmi radius.</p>		

64. FREQUENCY ENGINEERING PROCEDURES. To ensure that the proposed MLS-DME/P frequencies would provide interference-free operations within their FPSV's, the following analyses must be performed on the proposed frequencies.

a. **Intersite analysis** is used to determine whether the proposed frequencies meet the assignment criteria as specified in paragraph 63 d. There are two analysis methods, table and calculation.

b. Cosite analysis is used to avoid interference caused by interaction between the proposed MLS and DME/P frequencies and other frequencies in the vicinity of the proposed site. Cosite analysis is discussed in the appendix.

65. MLS INTERSITE ANALYSIS BY TABLE METHOD. Intersite analysis may be performed on a proposed MLS frequency through the use of the tables shown in figure 192 which shows conservative-worst-case separation distances:

a. Figure 193 is for MLS/MLS cochannel and adjacent channel. Adjacent channel criteria requires a minimum of 1.2 MHz separation for MLS sites at the same airport.

b. Tables for adjacent channels will be provided at a later date.

FIGURE 193. INTERIM MLS COCHANNEL SEPARATION DISTANCE

MLS DESIRED, MLS UNDESIRED. +26.5 dB PROTECTION	
FACILITY CLASS	SEPARATION (NMI)
MLS	205
1st Adjacent Channel	32
2nd Adjacent Channel	32

66. DME/P INTERSITE ANALYSIS BY TABLE METHOD. Intersite analysis may be performed on a proposed DME/P frequency through the use of the table shown in figure 194 which shows the conservative-worst-case separation distance.

FIGURE 194. MLS DME/P ASSIGNMENT CRITERIA

DME/P	VS.	DME/P T-DMEL-DMEH-DME			
		(nmi)	(nmi)	(nmi)	(nmi)
COCHANNEL	SAME CODE	205*	205	205	400
	DIFFERENT CODE	50	50	170	170
1ST ADJ. CHNL	SAME CODE	25	30	45	145
	DIFFERENT CODE	25	30	45	145
2ND ADJ. CHNL	SAME CODE	8	9	12	14
	DIFFERENT CODE	8	9	12	14
3RD ADJ. CHNL	SAME CODE	-	-	9	9
	DIFFERENT CODE	-	-	9	9
*RLOS to protect MLS angle receiver at 20,000'.					
Pulse loading criteria: Maximum 3 DME, DME/P or TACAN sites within 50 nmi radius and within ± 3 MHz.					
Ground receiver protection: ± 63 MHz minimum 15 nmi separation.					